

What is claimed is:

1. A light pipe with uniform side-light emission, comprising:
  - a) a core comprising a polymer and a fluoropolymer cladding on the core; the cladding having a lower refractive index than the core; and
  - 5 b) light-scattering material distributed within the core along an active section of light pipe in which side-light emission is desired;
  - c) the light-scattering material being distributed along the core with a density gradient chosen to achieve uniform side-light emission.
2. The light pipe of Claim 1, wherein the light-scattering material comprises titanium dioxide.
- 10 3. A light pipe with uniform side-light emission, comprising:
  - a) a core comprising a polymer and a fluoropolymer cladding on the core; the cladding having a lower refractive index than the core; and
  - b) light-scattering material distributed within at least one of the cladding and the core along an active section of light pipe in which side-light emission is desired;
  - 15 c) the light-scattering material being distributed in at least one of the cladding and the core along the active section of the light pipe, substantially only in a radial swath, along the longitudinal axis of the light pipe, of substantially less than 360 degrees, so that light preferentially exits the light pipe from the radial swath.
4. The light pipe of Claim 3, wherein the radial swath less than about 180 degrees.
- 20 5. The light pipe of Claim 4, wherein the radial swath is more than about 10 degrees.
6. The light pipe of Claim 4, wherein the radial swath is less than about 90 degrees.
7. The light pipe of Claim 3, wherein the lumen output as between inlet and outlet portions of a the active section is within plus or minus 10 percent of the average value of each other
8. The light pipe of Claim 3, wherein the light-scattering material is distributed in the cladding  
25 along the active section of the light pipe, with a density gradient chosen to yield uniform side light emission, and substantially only in a radial swath, along the longitudinal axis of the light pipe, of substantially less than 360 degrees, so that light preferentially exits the light pipe from the radial swath.
9. The light pipe of Claim 8, wherein the radial swath is less than about 180 degrees.
- 30 10. The light pipe of Claim 9, wherein the radial swath is more than about 10 degrees.

11. The light pipe of Claim 9, wherein the radial swath is less than about 90 degrees.
12. The light pipe of Claim 8, wherein the lumen output as between inlet and outlet portions of a the active section is within plus or minus 10 percent of the average value of each other
- 5 13. The light pipe of Claim 3, wherein the light-scattering material is uniformly distributed in the cladding along the active section of the light pipe substantially only in a radial swath, along the longitudinal axis of the light pipe, of substantially less than 360 degrees, so that light preferentially exits the light pipe from the radial swath.
14. The light pipe of Claim 13, wherein the radial swath is less than about 180 degrees.
15. The light pipe of Claim 14, wherein the radial swath is more than about 10 degrees.
- 10 16. The light pipe of Claim 14, wherein the radial swath is less than about 90 degrees.
17. The light pipe of Claim 13, wherein the lumen output as between inlet and outlet portions of a the active section is within plus or minus 10 percent of the average value of each other
18. The light pipe of Claim 3, wherein the light-scattering material is uniformly distributed in the core along the active section of the light pipe substantially only in a radial swath, along the longitudinal axis of the light pipe, of substantially less than 360 degrees, so that light preferentially exits the light pipe from the radial swath.
- 15 19. The light pipe of Claim 18, wherein the radial swath is less than about 180 degrees.
20. The light pipe of Claim 19, wherein the radial swath is more than about 10 degrees.
21. The light pipe of Claim 19, wherein the radial swath is less than about 90 degrees.
- 20 22. The light pipe of Claim 18, wherein the lumen output as between inlet and outlet portions of a the active section is within plus or minus 10 percent of the average value of each other.
23. A light pipe with uniform side-light emission, comprising:
- a) a core comprising an acrylic polymer and a fluoropolymer cladding on the core; the cladding having a lower refractive index than the core; and
- 25 b) light-scattering material being distributed in the core along an active section of the light pipe in which side-light emission is desired;
- c) the light-scattering material being distributed substantially only in a radial swath, along the longitudinal axis of the light pipe, of less than about 180 degrees, so that light preferentially exits the light pipe from the radial swath.

24. The light pipe of Claim 23, wherein the light-scattering material comprises titanium dioxide particles.
25. The light pipe of Claim 24, wherein the radial swath is between about 30 and 45 degrees.
26. The light pipe of Claim 25, wherein the active section is between about 0.5 and 5 meters long.
27. The light pipe of Claim 26, wherein the active section is between about 1.5 and 2.5 meters long.
28. The light pipe of Claim 26, wherein the particles are distributed with a density gradient chosen to result in uniform illumination along the active section.
29. The light pipe of Claim 28, wherein the lumen output as between inlet and outlet portions of the active section is within plus or minus 10 percent of the average value of each other.